UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,587	07/20/2001	Randal G. Martin	062986.0214	1407

			EXAMINER
7590	02/09/2005		HAILE, FEBEN

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ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/910,587	MARTIN ET AL.
	Examiner	Art Unit	
	Feben M Haile	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 July 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-18</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-18</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.   Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Doshi et al. (US 5,222,061), hereinafter referred to as Doshi and in view of Forin (US

6,594,701).

Regarding claim 1, Doshi discloses the limitations: generating a sequence

number (figure 1 unit 125 and column 3 lines 10-16); inserting the sequence number

into the data packet (figure 1 unit 120 and column 3 lines 17-20); selecting one of a

plurality of channels to transfer the data packet (figure 1 unit 120 and column 3 lines 29-

35); transferring the data packet over the selected one of the plurality of channels

(column 3 lines 29-35).

Doshi, however, fails to teach the limitation: generating a data packet in

response to a flow control credit.

Forin discloses a sending device that uses a credit message from a receiver to

control the flow of data packets (column 11 lines 62-64).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Doshi's transmitter and receiver to incorporate a credit-

based flow control system and method as taught by Forin. The motivation being to eliminate data being lost, data being overwritten, and/or data being retransmitted due to the transmitter sending too much data to the receiver.

Regarding claim 2, Doshi discloses the limitations: incrementing the sequence number in response to transfer of the data packet (column 3 lines 12-16).

Regarding clam 3, Doshi fails to disclose the limitations: decrementing a number of flow control credits in response to transfer of the data packet. This is taught by Forin (column 12 lines 50-55). It would have been obvious to combine Doshi and Forin for the same reasons in claim 1.

Regarding claim 4, Doshi fails to disclose the limitations: receiving a reply, the reply including flow control credit; incrementing a number flow control credits in response to receipt of the reply. This is taught by Forin (column 12 lines 50-55). It would have been obvious to combine Doshi and Forin for the same reasons in claim 1.

Regarding claim 5, Doshi discloses a sequence number generator, which may be a counter, that generates a sequence number (column 3 lines 10-12). It is inherently known that once a counter reaches its maximum number it will reset itself to the original number. Doshi thus discloses the limitation: resetting the sequence number to an initial value.

Regarding claim 6, Doshi discloses the limitations: sequence number unit operable to generate a sequence number (figure 1 unit 125 and column 3 lines 10-12); the request channel controller operable to insert the sequence number into the data packet (figure 1 unit 120 and column 3 lines 17-20), the request channel controller

operable to select one of plurality request channels (column 3 lines 29-35), the request channel controller operable to transfer the data packet over the selected one of the plurality of request channels (column 3 lines 29-35).

Doshi, however, fails to teach the limitation: a request channel controller operable to receive a data packet in response to a flow control credit.

Forin discloses a sending device that utilizes a credit message to determine the size and order of data packets to be sent to the receiver (column 3 lines 26-28).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Doshi's transmitter and receiver to incorporate a credit-based flow control system and method as taught by Forin. The motivation being more reliable transmissions by allowing the transmitter to send the correct amount of data to the receiver so that data will not be lost, overwritten, and/or retransmitted.

Regarding claim 7, Doshi discloses the limitations: wherein the request channel controller is operable to generate an increment signal (column 3 lines 12-16), the sequence number unit operable to advance the sequence number in response to the increment signal (column 3 lines 12-16).

Regarding claim 8, Doshi fails to disclose the limitations: a credit counter unit operable to maintain a number of flow control credits. This is taught by Forin (column 12 lines 4-7). It would have been obvious to combine Doshi and Forin for the same reasons in claim 1.

Regarding claim 9, Doshi discloses the limitations: wherein the request channel controller is operable to generate an increment signal (column 3 lines 12-16).

In a flow control system, it is inherently known that data transfer between a sender and receiver is increased or decreased according to an indication of a buffer size, therefore allowing more reliable transmissions. Doshi thus discloses the limitation: wherein a request channel controller is operable to generate a decrement signal.

Doshi, however, fails to teach the limitation: the credit counter unit operable to reduce the number of flow control credits in response to the decrement signal.

Forin discloses the limitation: a sender constructing data packets based on credits indicative of buffer sizes sent from a receiver (column 12 lines 50-55).

It would have been obvious to combine Doshi and Forin for the same reasons in claim 6.

Regarding claim 10, Doshi fails to disclose the limitations: wherein the credit counter unit is operable to increment the number of flow control credits in response to receipt reply including a flow control credit reply. This is taught by Forin (column 12 lines 50-55). It would have been obvious to combine Doshi and Forin for the same reasons in claim 6.

Regarding claim 11, Doshi discloses the limitations: receiving a plurality of data packets (see figure 1 unit 200 and column 3 lines 63-65), each data packet including a sequence number (column 3 lines 17-20), the plurality of packets being received in a non-sequential order (column 4 lines 5-14); storing each of the plurality of data packets in a buffer according to its sequence number (figure 1 unit 210 and column 4 lines 5-8); reading the plurality of data packets in sequential order from the buffer according to the sequence number (column 4 lines 8-14).

Doshi, however, fails to teach the limitation: generating a flow control credit in response to each of the plurality of data packets being read from the buffer.

Forin discloses a sending device that uses a credit message from a receiver to control the flow of data packets (column 11 lines 62-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Doshi's transmitter and receiver to incorporate a credit-based flow control system and method as taught by Forin. The motivation being to eliminate data being lost or overwritten due to the transmitter sending too much data to the receiver.

Regarding claim 12, Doshi discloses the limitations: setting a valid bit in response to a data packet being stored in a portion of the buffer associated with the valid bit (column 4 lines 20-25).

Regarding claim 13, Doshi discloses a controller that sets a binary value in correspondence with the sequence number in the packet (column 4 lines 20-25). It is inherently known that the bit will reset itself once the state of that packet is completed. Doshi thus discloses the limitation: reading a data packet from the buffer in response to the valid bit; clearing the valid bit in response to a data packet being read from the associated portion of the buffer.

Regarding claim 14, Doshi discloses the limitations: wherein the sequence number is used to directly index into the buffer (column 4 lines 5-8).

Regarding claim 15, Doshi discloses the limitations: write port controller operable to receive a plurality of data packets in a non-sequential order (figure 1 unit

205 and column 4 lines 5-14), each data packet including a sequence number (figure 1

unit 205 and (column 3 lines 17-20); a re-order buffer operable to store the plurality of

data packets (figure 1 unit 210 and column 4 lines 5-8), the write port controller

operable to place each data packet into the re-order buffer in response to its sequence

number (column 4 lines 5-8); a valid unit operable to generate a valid bit for each

portion of the re-order buffer (figure 1 unit 203 and column 4 lines 20-25), the valid bit

unit operable to set a valid bit for a corresponding portion of the re-order buffer in

response to a data packet being stored therein (figure 1 unit 203 and column 4 lines 20-

25); and a read port controller operable to provide data packets in a sequential order in

response to a valid bit being set (figure 1 unit 250 and column 4 lines 5-14).

   Regarding claim 16, Doshi discloses the limitations of base claim 15.

   Doshi, however, fails to teach the limitation: wherein the read port controller is

operable to clear the valid bit upon providing a data packet from the re-order buffer

   However, Forin discloses a credit list builder/communicator that generates credit

lists that a sender uses to control the flow of data packets to a receiver (column 11 lines

62-64 & column 12 lines 4-7).

   It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Doshi's transmitter and receiver to incorporate a credit-

based flow control system and method as taught by Forin. The motivation being more

reliable transmissions by allowing the transmitter to send the correct amount of data to

the receiver so that data will not be lost, overwritten, and/or retransmitted.

Regarding claim 17, Doshi discloses a controller that sets a binary value in correspondence with the sequence number in the packet (column 4 lines 20-25). It is inherently known that the bit will reset itself once the state of that packet is completed. Doshi thus discloses the limitation: wherein the read port controller is operable to clear the valid bit upon providing a data packet from the re-order buffer.

Regarding claim 18, Doshi discloses the limitations: wherein the write port controller uses the sequence numbers to directly index the re-order buffer (column 4 lines 5-8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Monin (US 6,243,358), Process and Device for Allocating Resources in a Packet Transmission Digital Network

b) Boyd et al. (US 2004/0049612), Data Reordering Mechanism for High Performance Networks

c) Chapman et al. (US 6,246,684), Method and Apparatus for Re-ordering Data Packets in a Network Environment

d) Barkey et al. (US 5,825,748), Credit-Based Flow Control Checking and Correction System

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Feben M Haile whose telephone number is (571) 272-3072. The examiner can normally be reached-on 6:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RICKY NGO
PRIMARY EXAMINER